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U. S. Architect of the Capitol.

60TH CONGRESS, 2d Session. } HOUSE OF REPRESENTATIVES. } DOCUMENT No. 1499.

UNDERGROUND TRANSPORTATION BETWEEN CAPITOL AND CERTAIN OTHER PUBLIC BUILDINGS.

LETTER FROM THE SUPERINTENDENT OF THE CAPITOL BUILDING AND GROUNDS TRANSMITTING PRELIMINARY REPORT RELATING TO UNDERGROUND TRANSPORTATION BETWEEN THE CAPITOL AND CERTAIN OTHER PUBLIC BUILDINGS.

MARCH 3, 1909.—Ordered to be printed with illustrations.

OFFICE OF SUPERINTENDENT
UNITED STATES CAPITOL BUILDING AND GROUNDS,
Washington, D. C., March 3, 1909.

DEAR SIR: I beg to submit the following preliminary report on the resolution introduced by Mr. Greene in the House of Representatives January 5, 1909, which resolution reads as follows:

Resolved, That the Superintendent of the Capitol inquire into and report thereon to the Committee on Public Buildings and Grounds the most practicable method for underground transpor ation to and from the Capitol, the Senate and House Office Buildings, the Union Railroad Station, the contemplated post-office building, and the Government Printing Office.

I have examined into the question of subways between the Capitol Building and the several buildings named in the resolution. I find that it is entirely feasible to connect the Capitol Building, the Senate and House Office buildings with the Union Station, the proposed new post-office, and the Government Printing Office, and that the construction of a subway would not cross the line of private property; hence the right of way would cost nothing.

I present a general scheme herewith, in the form of a blueprint, upon which is marked the existing subways between the Capitol and office buildings, colored yellow, and the proposed new subways, colored red.

Roughly estimated, I find that there will be about 4,800 linear feet of construction. It is impossible to determine the exact cost of the proposed subway extensions until the type of subway is determined. I feel justified in recommending the type of subway now existing between the Capitol and the office buildings. Upon that basis I estimate the approximate cost of construction at $500,000.

You will note on the plans I have laid out one section of the new subway directly between the Senate and House Office buildings and

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have connected up the other sections of the subway with the substation at the Senate Office Building. Suitable substations have already been constructed at each of the office buildings, with the idea in view that perhaps some day other subway construction would connect up with other buildings and the Capitol.

I consider a subway between the Printing Office and the Senate Office Building, thereby connecting with the Capitol Building, to be entremely desirable. The new section of the subway proposed, between the House and Senate Office buildings and running directly across the Capitol grounds, will surely come in the near future.

The immense volume of transportation between the Capitol and Government Printing Office is now handled by wagons. It could be handled much more easily by subway transportation, owing to the fact that if subways like those existing are continued they are available for a double-track transportation scheme which will enable the service to be carried on at less expense and with great promptness.

Assuming the subways to be built, the question of transportation next presents itself. Two methods are available: A double-track narrow-gauge system, electrically operated, or a system lately introduced known as the monorail system, electrically operated. I have had our consulting engineer look into the matter for me and he has obtained certain information, from which I have extracted the following memorandum of comparison made by the chief engineer of the American Monorail Company:

The line proposed is an underground railway in Washington, D. C., from the House Office Building to the Government Printing Office, with stations at the Senate Office Building and Union Station. The total length of the line is approximately 4,500 feet.

To arrive at a fair comparison between the cost of construction and operation of a narrow-gauge electric railway and a monorail road, the following assumptions have been made:

1. The road to be double track.
2. That each car body be similar except for special constructional details covered by the patents of the American Monorail Company.
3. That the current be returned through a copper conductor or trolley wire instead of through the ground rail.
4. That the 60-pound rail of the monorail will wear longer than the rails of the narrow-gauge road, especially on curves, owing to the small amount of flange friction.
5. That a saving of power consumption of at least 25 per cent will be effected by the material reduction of weight, friction, and oscillation.
6. That the monorail car, despite the fact that its motors will develop 200 horsepower, will weigh fully 3,000 pounds less than the narrow-gauge car which will generate 160 horsepower.
7. That the total resistance of the monorail line conductors is only 0.25 ohms, as compared with 0.35 ohms for the narrow-gauge line. With 100 amperes consumption this would indicate a line loss of 4.5 per cent for the monorail, as compared with 6.3 per cent.
8. That assumptions 5, 6, and 7 indicate that the monorail will be capable of much greater speed with no greater power output at the generator.

ESTIMATED COST OF TRACK AND ELECTRIC CONDUCTORS.

	Narrow gauge.	Monorail.
2 70# T rails	$5,625	.....
1 60# Shanghai rail	.....	$2,415
Splice joints and bolts	420	180
Spikes	160	.....
3,600 ties, 6 feet long	2,160	.....
3,600 concrete ties, 20 inches long	.....	1,260
2 #00 trolley wires	1,322	.....
1 #00 trolley wire for return circuit	.....	661
2 2½ inches by 2½ inches L steel guide rails	.....	1,674
Overhead suspension material	770	780
Laying rail	1,350	700
Erecting overhead material	400	500
Total	12,207	8,170

ESTIMATED COST OF CARS.

Car body	$3,000	$2,800
2 trucks with four 40-horsepower motors, etc	3,250	.....
2 monorail trucks with eight 25-horsepower motors	.....	2,975
4 trolley stands, poles, etc	120	.....
2 overhead trucks and collectors	.....	200
Cars, each	6,370	5,975

In conclusion I will state that without giving any further details on this matter, the proposition suggested by the resolution is feasible and desirable.

Very respectfully,

ELLIOTT WOODS,
Superintendent United States Capitol Building and Grounds.

Hon. RICHARD BARTHOLDT,
Chairman Committee on Public Buildings and Grounds, House of Representatives.

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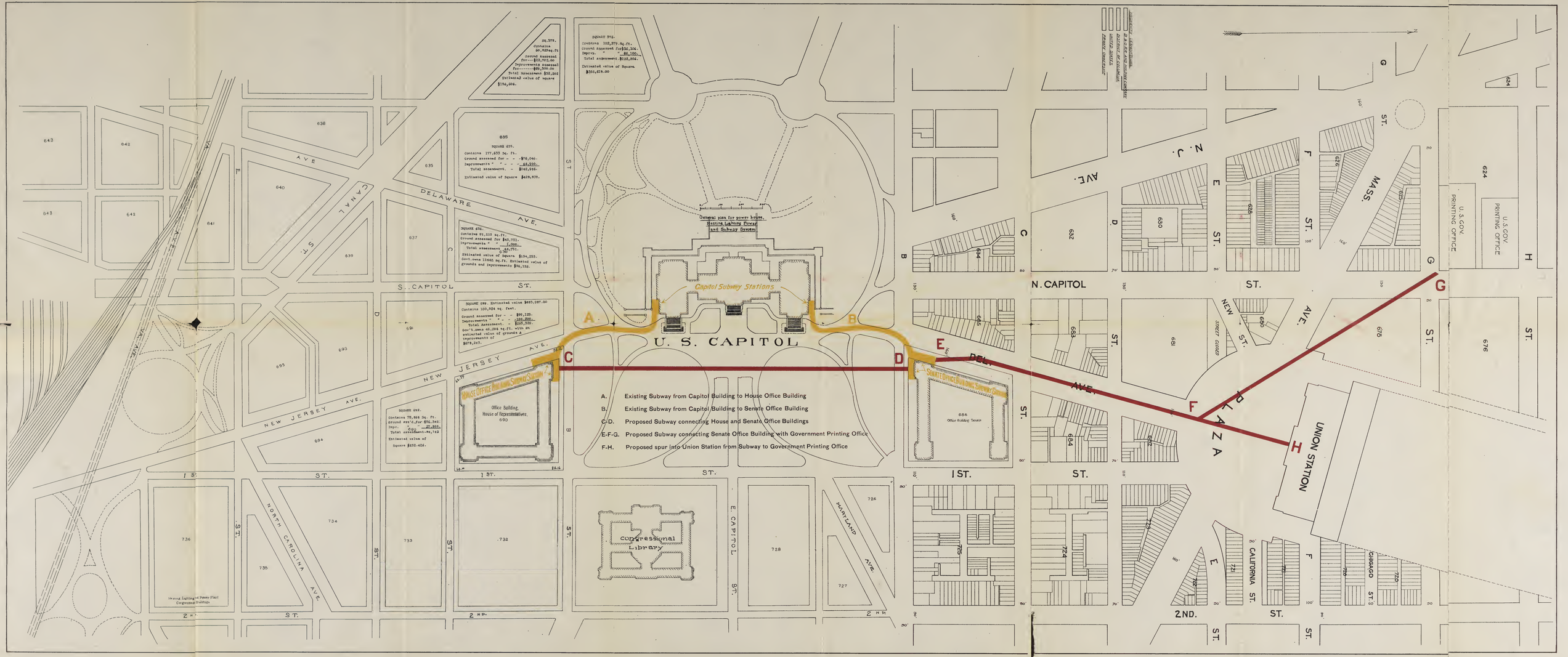

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